Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

Title V-Synthetic Minor (Renewal Draft Permit) No. V-05-052
Union Underwear Company, Inc.
Jamestown, KY
March 24, 2006
HERBERT CAMPBELL, REVIEWER
SOURCE I.D. #: 021-207-00017
SOURCE A.I. #: 3894
ACTIVITY #: APE20050003

SOURCE DESCRIPTION:

Union Underwear Company, Inc. is a manufacturing plant for Men's and Boy's underwear. Applications for construction of a new 95 mmBtu/hr boiler and the renewal of the Title V / Synthetic Minor Permit, V-00-030, for the Union Underwear Company, Inc. were received on March 2, 2005 and June 23, 2005, respectively. The new construction is a 95mmBtu/hr natural gas or #6 oil fired boiler. This construction will be combined with the renewal application.

Several steam dryers that were classified as insignificant activities were removed and replaced by natural gas dryers. Due to their current burner sizes these natural gas dryers can meet the definition of insignificant activity. However, these dryers are equipped so that the burner sizes may be increased and the Potential to Emit (PTE) of each regulated air pollutant could exceed 5 tons/year and the gas fired dryers would not then be classifiable as insignificant activities. Therefore, the source requests that all natural gas fired dryers to be combined as one emission point for permitting and recordkeeping ease.

The following is a list of significant emission units, control equipment and construction date.

E. U. 01: Residual No 6 Oil -Fired Indirect Heat Exchanger rated capacity 60 mmBtu/hr construction commenced 1981.

E. U. 02: Coal – Fired Indirect Heat Exchanger, spreader stoker rated capacity 74.3 mmBtu/hr. Equipped with mechanical collectors, incorporated with fly ash re-injection system and baghouse for particulate control, custom designed scrubber for sulfur dioxide control and construction commenced 1987.

E. U. 03: Natural Gas or Residual No 6 Oil -Fired Indirect Heat Exchanger rated capacity 95 mmBtu/hr construction commenced 2006.

E. U. 04: Natural Gas-fired Dryers (includes 5 units) 57.5 mmBtu/hr (total combined) construction commenced 2003.

The following regulations are applicable to the units:

EU 01: Residual No 6 Oil -Fired Indirect Heat Exchanger

The EU 01 unit is a Keeler NB # 5425 No 6 oil-fired boiler and was installed after 1981. The unit has a rated fuel input capacity of 60 million British thermal units per hour (mmBtu/hr). The primary fuel burned for the unit is No 6 oil.

401 KAR 59:015, New indirect fired heat exchangers, applicable to an emissions unit with a rated capacity less than 250 mmBtu/hr which commenced on or after April 9, 1972.

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.36 lb/mmBtu based on a three-hour-average.

Pursuant to 401 KAR 59:015, Section 4(2), emissions shall not exceed 20% opacity based on a six minute average, except that a maximum of 40% opacity, based on a six minute average, shall be permissible for not more than 6 consecutive minutes in any consecutive 60 minutes during cleaning the fire-box or blowing soot

Pursuant to 401 KAR 59:015, Section 5(1)(c), sulfur dioxide emissions shall not exceed 1.44 lb/mmBtu based on a twenty four-hour average and 225 tons/yr for Source-wide emission limits. [set to preclude 51:017 applicability].

Compliance for EU 01 with the allowable particulate and sulfur dioxide standards may be demonstrated by calculating particulate and sulfur emissions using the following formulas.

No. 6 fuel-oil - SCC 1-02-004-01
PM Emissions (lb/mmBtu) from combustion of No. 6 fuel-oil = (U.S. EPA approved or AP-42 emission factor: [(9.19(S) + 3.22) lbs/10^3 gallons] ÷ (heating value from fuel analysis in mmBtu/10^3 gallons) where S is the percent weight sulfur in the fuel oil.

SO_2 Emissions (lb/mmBtu) from combustion of No. 6 fuel-oil = (U.S. EPA approved or AP-42 emission factor: 157S lbs/10^3 gallons) ÷ (heating value from fuel analysis in mmBtu/10^3 gallons).

The permittee shall perform a qualitative visual observation of the opacity of emissions from each unit on a weekly basis and maintain a log of the observations. If visible emissions from any stack are seen, the permittee shall determine the opacity emissions by Reference Method 9 and initiate an inspection of the control equipment for any necessary repairs.

The permittee shall monitor on a monthly basis the heat content, sulfur content, and the amount combusted of the No. 6 fuel oil. The permittee may use fuel supplier certification for heat and sulfur content to meet this requirement. Fuel supplier certification shall include the name of the oil supplier and a statement from the oil supplier that the oil complies with the specifications under the definition of # 6 fuel oil as specified in the regulation.

Tons of sulfur dioxide emissions due to No. 6 fuel oil usage shall be calculated for each month using the total No. 6 fuel oil usage rate and the average fuel oil heat and sulfur content for that month.

Records of No. 6 fuel oil burned and No. 6 fuel oil analysis shall be maintained on a monthly basis.

The permittee shall maintain records of the monthly and rolling twelve (12) month total sulfur dioxide emissions.

EU 02: Coal – Fired Indirect Heat Exchanger

The EU 02 unit is a Vogt Boiler # 36103 Spreader stoker, coal-fired unit equipped with mechanical collectors, incorporated with fly ash re-injection system and was installed after 1987. The unit has a rated fuel input capacity of 74.3 million British thermal units per hour (mmBtu/hr). The primary fuel burned for the unit is coal and is equipped with a baghouse for particulate and scrubber for sulfur dioxides.

401 KAR 59:015 New indirect heat exchangers applicable to an emission unit with a capacity of less than 250 mmBtu per hour and commenced on or after April 9, 1972.

401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.30 lb/mmBtu based on a three-hour-average.

401 KAR 59:015, Section 4(2), emissions shall not exceed 20% opacity based on a six minute average, except that a maximum of 40% opacity, based on a six minute average, shall be permissible for not more than 6 consecutive minutes in any consecutive 60 minutes during cleaning the fire-box or blowing soot.

Sulfur dioxide emissions shall not exceed 1.2 lb/mmBtu based on a twenty four-hour average and 225 tons/yr for Source-wide emission limits. [set to preclude 51:017 applicability].

The annual emission and coal usage limits listed shall be based on emissions and coal usage during any consecutive twelve (12) month period

Compliance for EU 02 with the allowable particulate and sulfur dioxide standards may be demonstrated by calculating particulate and sulfur emissions using the following formulas.

Coal- SCC 1-02-002-04
PM Emissions (lb/mmBtu) from combustion of coal = (U.S. EPA approved or AP-42 emission factor: [(17.0 lbs/ton) ÷ (heating value from fuel analysis in Btu/lb)] ÷ (2000 lb/ton)] x [1,000,000 Btu/mmBtu] x [1-(baghouse control efficiency/100)]

SO_2 Emissions (lb/mmBtu) from combustion of coal = [(U.S. EPA approved or AP-42 emission factor: 38S lbs/ton) ÷ (heating value from fuel analysis in Btu/lb)] ÷ (2000 lb/ton)] x [1,000,000 Btu/mmBtu] x [1-(scrubber control efficiency/100)]

401 KAR 59:015, Section 8, particulate, sulfur dioxide and visible emission limitations specified herein shall be measured by EPA Reference Methods 5,6 and 9 respectively, 40 CFR 60, Appendix A.

The permittee shall conduct at least one performance test for particulate emissions within six months following the issuance of the final permit.

The permittee shall perform a qualitative visual observation of the opacity of emissions from each unit on a weekly basis and maintain a log of the observations. If visible emissions from any stack are seen, the permittee shall determine the opacity emissions by Reference Method 9 and initiate an inspection of the control equipment for any necessary repairs.

The permittee shall monitor the amount of fuel combusted on a daily basis and shall monitor emissions of sulfur dioxide each month by calculation using emission factors, fuel usage rates, and average fuel sulfur heat content. Waste water scrubbing liquid flow rate (inlet) shall be greater than 400 gallons per minute on a 24 hour average. Also, scrubber inlet liquid pH shall be greater than 9 on a 24-hour average.

The permittee shall maintain records of occurrence and duration of startup, shutdown or malfunction of the air pollution control equipment. Records of heating value, ash and sulfur content of the weekly composite coal sample shall be maintained. Also, records of the amount of coal fuel burned shall be maintained on a daily basis.

E.U. 03: Natural Gas or Residual No 6 Fuel Oil-Fired Indirect Heat Exchanger - New
The primary fuel burned for the unit is natural gas, and the secondary fuel is No 6 fuel oil.

The EU 03 unit is a Nebraska D2570 Boiler natural gas/No. 6 fuel oil fired unit that has not yet been installed. The unit has a rated fuel input capacity of 95 million British thermal units per hour (mmBtu/hr). The primary fuel burned for the unit is natural gas and the secondary fuel is No. 6 fuel oil.

401 KAR 59:015 New indirect heat exchangers applicable to an emission unit with a capacity of less than 250 mmBtu per hour and commenced on or after April 9, 1972.

401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Dc, Standards of Performance for small industrial-commercial-institutional steam generating units, applies to each steam generating unit commenced after June 9, 1989 that has a maximum design heat input capacity between 10mmBtu/hr and 100mmBtu/hr.

Pursuant to 401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.26 lb/mmBtu based on a three-hour-average.

Pursuant to 401 KAR 59:015, Section 4(2), emissions shall not exceed 20% opacity based on a six minute average, except that a maximum of 40% opacity, based on a six minute average, shall be permissible for not more than 6 consecutive minutes in any consecutive 60 minutes during cleaning the fire-box or blowing soot.

Pursuant to 401 KAR 59:015, Section 5(1)(c), sulfur dioxide emissions shall not exceed 0.82 lb/mmBtu based on a twenty four-hour average and 225 tons/yr for Source-wide emission limits. [set to preclude 51:017 applicability].

These units are considered to be in compliance with the allowable particulate matter, opacity, and sulfur dioxide limitations while burning natural gas.

Pursuant to 401 KAR 52:020, and 40 CFR 60, Subpart Dc, to meet the periodic monitoring requirement for opacity, the permittee shall use a continuous opacity monitor (COM).

Opacity shall be demonstrated by using EPA reference method 9. Alternatively, the permittee may use COM in determining compliance with opacity.

Compliance for EU 03 with the allowable particulate and sulfur dioxide standards when burning fuel oil may be demonstrated by calculating particulate and sulfur emissions using the following formulas.

No. 6 fuel-oil - SCC 1-02-004-01

PM Emissions (lb/mmBtu) from combustion of No. 6 fuel-oil = (U.S. EPA approved or AP-42 emission factor: [(9.19(S) + 3.22) lbs/10^3 gallons]/(heating value from fuel analysis in mmBtu/10^3 gallons) where S is the percent weight sulfur in the fuel oil.

SO_2 Emissions (lb/mmBtu) from combustion of No. 6 fuel-oil = (U.S. EPA approved or AP-42 emission factor: 157S lbs/10^3 gallons) / (heating value from fuel analysis in mmBtu/10^3 gallons).

When burning fuel-oil, the permittee shall determine the opacity emissions from the stack by EPA reference method 9 on a weekly basis and maintain a log of the observations. Alternatively the permittee may use the COM in determining compliance with opacity.

The permittee shall monitor on a monthly basis the heat content, sulfur content, and the amount combusted of the No. 6 fuel oil. The permittee may use fuel supplier certification for heat and sulfur content to meet this requirement. Fuel supplier certification shall include the name of the oil supplier and a statement from the oil supplier that the oil complies with the specifications under the definition of # 6 fuel oil as specified in the regulation.

Tons of sulfur dioxide emissions due to No. 6 fuel oil usage shall be calculated for each month using the total No. 6 fuel oil usage rate and the average fuel oil heat and sulfur content for that month.

Records of No. 6 fuel oil burned and No. 6 fuel oil analysis shall be maintained on a monthly basis.

The permittee shall maintain records of the monthly and rolling twelve (12) month total sulfur dioxide emissions.

EU 04: Natural Gas-fired Dryers

The EU 04 unit Natural Gas-Fired Dryers includes 5 units (Tube-Tex, Ultra III, Model 425 Burner-Dryer #1,2,3&4 installed 2003 to 2005 & Santex, Model 415 Burner- Dryer #5 installed 2003) Combined capacity 57.5 mmBtu/hr.

401 KAR 59:010, New Process operations, applicable to an emission unit that commenced on or after July 2, 1975.

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions from the stack shall not exceed [17.31 (P) $^{0.16}$] lbs/hour based on a three-hour-average, where P is the processing rate in tons/hour. Compliance with the allowable particulate standard may be demonstrated by calculating particulate emissions using dried cloth processing rates, and emission factor information.

Pursuant to 401 KAR 59:010, Section 3(1)(a), any continuous emissions into the open air shall not equal or exceed 20% opacity based on a six-minute-average.

The permittee shall perform a qualitative visual observation of the opacity of emissions from each unit on a weekly basis and maintain a log of the observations. If visible emissions from any stack are seen, the permittee shall determine the opacity emissions by Reference Method 9 and initiate an inspection of the control equipment for any necessary repairs.

Regulations not applicable to the units due to self requested Synthetic Minor permit limits:

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced before August 7, 1979.

401 KAR 57:002, 40 CFR Part 61 national emission standards for hazardous air pollutants.

EMISSION AND OPERATING CAPS DESCRIPTION:

Union Underwear Company, Inc. requests plant-wide federally enforceable permit limit of 225 tons per year for all regulated pollutants in order to preclude 401 KAR 51:017, Prevention of Significant Deterioration (PSD) regulations. Also, Union Underwear Company, Inc. requests to remove the coal usage limit of 14,840 tons per year and replace with limits for all fuels commensurate with Synthetic Minor emission limitations. However, boilers shall not burn fuels concurrently so as to stay at or below the permitted level for all regulated air pollutants.

Comments:

The permittee has agreed to an emissions cap of 225 tons per year, based on any 12 consecutive months, for all regulated pollutants to preclude applicability of 401 KAR 51:017, Prevention of significant deterioration of air quality. The permittee will assure compliance for each pollutant with use of a calculation procedure based on EPA methods and monthly tracking of total emissions on a rolling basis.

The permittee may assure compliance with the emissions limitations and standards conditioned within the permit for E. U. 01, 02, 03 & 04 by performing the calculations based upon heat and sulfur content, fuel usage and processing rates, and emission factor information. Next, the permittee is required to monitor the fuel consumption rates, processing rates, and operation of each respective unit's control equipment used to control emissions. Also, for the natural gas-fired dryers the permittee is required to monitor and record daily fuel usage. From this usage and based upon AP-42 emission factors the permittee will calculate regulated pollutant emissions for the natural gas-fired dryers. As a self imposed restriction to preclude the applicability of 401 KAR 51:017, emission of regulated pollutants, carbon monoxide (CO), particulate matter (PM), particulate matter less than 10 microns (PM_{10}), nitrogen oxides (NO_x), sulfur dioxides (SO2), and lead emissions from all non-fugitive sources shall not exceed 225 tons each, during any consecutive twelve (12) month rolling total. To demonstrate compliance, the permittee shall maintain records of the monthly CO, PM, PM_{10} , NOx, SO2 and lead emissions from all non-fugitive sources, and summarize them on a 12-month rolling average total.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.